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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/608,039      | 06/30/2003  | Sanjay Ghemawat      | 0026-0030           | 7559             |

44989 7590 12/13/2005

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EXAMINER

DAYE, CHELCIE L

ART UNIT PAPER NUMBER

2161

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/608,039

**Applicant(s)**

GHEMAWAT ET AL.

**Examiner**

Chelcie Daye

**Art Unit**

2161

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2/03/2004</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. This action is issued in response to Application filed on June 30, 2003.
2. Claims 1-25 are pending.
3. Claims 1-25 are rejected.

### ***Claim Objections***

4. Claims 1,7,8,10,13,14,18-20,24, and 25 are objected to because of the following informalities: the claims as stated above include the term "ones", this term should be a singular term. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:  
  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
6. Claims 1,7,12, and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1,7,12, and 13 recites "do not exist". Examiner is unsure how one is able to identify and delete something that "does not exist".

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***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1,2,4-7,10-13, and 20-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Mattis (US Patent No. 6,209,003).

Regarding Claims 1 and 12, Mattis discloses a method for deleting one or more of a plurality of files, the files including one or more chunks stored by a plurality of servers, the method comprising:

a master connected to the servers and configured to (column 8, lines 60-65, Mattis):

identifying a file to be deleted (column 21, lines 59-62, Mattis; wherein fragments are referring to files),

renaming the identified file (column 3, lines 16-19, Mattis);

permanently deleting the renamed file (column 16, lines 48-52, Mattis) a predetermined amount of time after renaming the identified file (column 22, lines 43-47, Mattis) as part of a garbage collection process (Fig.8A, column 21, lines 52-55, Mattis);

receiving, from the servers, information concerning chunks stored by the servers (column 8, lines 16-19, Mattis; wherein keys are referring to chunks); and

identifying, to the servers, ones of the chunks that do not exist possibly due to the permanent deletion of the renamed file (column 33, lines 32-40, Mattis).

Regarding Claim 2, Mattis discloses a method wherein the identifying a file to be deleted includes:

receiving a deletion instruction regarding the file (column 22, lines 31-35, Mattis).

Regarding Claim 4, Mattis discloses a method wherein the predetermined amount of time is a user-configurable amount of time (column 22, lines 14-23, Mattis).

Regarding Claim 5, Mattis discloses a method wherein the user-configurable amount of time differs for different ones of the files (columns 22-23, lines 65-67 and 1-5, respectively, Mattis).

Regarding Claim 6, Mattis discloses a method wherein metadata is associated with the files (column 25, lines 2-8, Mattis); and wherein the permanently deleting the renamed file (column 16, lines 48-52, Mattis)


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includes erasing the metadata associated with the renamed file (column 25, lines 12-16, Mattis).

Regarding Claim 7, Mattis discloses a method comprising:  
deleting, by the servers, the ones of the chunks that do not exist  
(Fig. 9B, columns 35 and 36, lines 65-67 and 1-7, Mattis; wherein the  
process of modifying is interpreted as changing a file whereas the old file  
no longer exists, along with the chunks that are associated with the files).

Regarding Claim 10, Mattis discloses a method comprising:  
maintaining versions of the chunks (column 17, lines 42-46, Mattis);  
identifying stale ones of the chunks based on the versions of the  
chunks (column 26, lines 15-21, Mattis); and  
deleting the stale chunks (column 26, lines 21-22, Mattis).

Regarding Claim 11, Mattis discloses a method wherein metadata  
is associated with the chunks (column 25, lines 2-8, Mattis); and wherein  
the deleting the stale chunks (column 26, lines 21-22, Mattis) includes  
erasing the metadata associated with the stale chunks (column 25, lines  
12-16, Mattis).



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Regarding Claims 20,22,24,and 25, Mattis discloses method for deleting stale replicas of chunks, the replicas being stored by a plurality of servers, the method comprising:

associating version information with replicas of chunks (column 14, lines 29-37, Mattis);

identifying stale replicas based on the associated version information (column 26, lines 15-21, Mattis);

deleting the stale replicas (column 26, lines 21-22, Mattis);

receiving, from the servers, information concerning replicas stored by the servers (column 8, lines 16-19, Mattis); and

identifying, to the servers, ones of the replicas that are stale replicas (column 26, lines 15-21, Mattis).

Regarding Claim 21, Mattis discloses a method wherein the version information for one of the replicas is updated each time a lease is granted to the replica (column 26, lines 8-15, Mattis).

Regarding Claim 23, Mattis discloses a method wherein the deletion of the stale replicas (column 26, lines 21-22, Mattis) occurs as part of a garbage collection process (Fig.8A, column 21, lines 52-55, Mattis).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mattis (US Patent No. 6,209,003) as applied to claims 1,2,4-7,10-13, and 20-25 above, and further in view of Manley (US Patent Publication No. 20030182330).

Regarding Claim 3, Mattis discloses all of the claimed subject matter. However, Mattis does not explicitly disclose a method comprising:

receiving an un-deletion instruction regarding the file; and

restoring an original name to the file without permanently deleting the renamed file. On the other hand, Manley discloses a method comprising receiving an un-deletion instruction regarding the file (pg.13, ¶0132, lines 1-8, Manley; wherein the rollback procedure performs the instructions of undoing (which includes un-deleting) changes); and restoring an original name to the file without permanently deleting the renamed file (pg.7, ¶0067, lines 12-28, Manley). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the Manley teachings in the Mattis system. A skilled artisan would have been motivated to combine in order to protect oneself from



careless errors. For example, if a user deletes a file by unknowingly, having the option to backtrack and undo the mistake. As a result, this allows the user to double check the systems actions as well as their own.

11. Claims 8-9 and 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mattis (US Patent No. 6,209,003) as applied to claims 1,2,4-7,10-13, and 20-25 above, and further in view of "New-Value Logging in the Echo Replicated File System", by Hisgen, Birrell, Jerian, Mann, and Swart, Published 1993; referred to hereinafter as "Hisgen".

Regarding Claim 8, Mattis discloses all of the claimed subject matter. However, Mattis does not explicitly disclose a method comprising:

identifying orphaned ones of the chunks, including:

providing a mapping of file names to chunks, and

identifying chunks, as the orphaned chunks, that are not reachable from any of the file names; and

deleting the orphaned chunks. On the other hand, Hisgen discloses a method comprising identifying orphaned ones of the chunks (pg.24, ¶13, lines 4-5, Hisgen), including: providing a mapping of file names to chunks (pg.23, ¶13, lines 1-3, Hisgen; wherein the Fid map is mapping the file identifiers to the addresses, which examiner interprets as 'chunks'), and identifying chunks, as the orphaned chunks (pg.24, ¶13, lines 4-5, Hisgen), that are not reachable from any of the file names (pg.24, ¶13, lines 1-4,

Hisgen); and deleting the orphaned chunks (pg.24, ¶3, lines 5-8, Hisgen). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the Hisgen teachings in the Mattis system. A skilled artisan would have been motivated to combine in order to recognize and delete information that was no longer accessible within the system. Getting rid of the orphaned files along with the files that are no longer in use would save the system time. Instead of the system performing multiple searches for different files, this permits the system to decrease its workload by gathering all of the useless data at once. As a result, this allows the system to allocate needed space for future use.

Regarding Claims 9 and 15, the combination of Mattis in view of Hisgen, discloses a method wherein metadata is associated with the chunks (column 25, lines 2-8, Mattis); and wherein the deleting the orphaned chunks (pg.24, ¶3, lines 5-8, Hisgen) includes erasing the metadata associated with the orphaned chunks (See Fig.1, pg.28, ¶5, lines 1-4, Hisgen).

Regarding Claims 14,16,18 and 19, the combination of Mattis in view of Hisgen, discloses a method for deleting orphaned chunks of a plurality of chunks stored by a plurality of servers, the method comprising:  
providing a mapping of file names to chunks (pg.23, ¶3, lines 1-3, Hisgen);

identifying chunks, as orphaned chunks (pg.24, ¶3, lines 4-5, Hisgen), that are not reachable from any of the file names (pg.24, ¶3, lines 1-4, Hisgen);

deleting the orphaned chunks (pg.24, ¶3, lines 5-8, Hisgen);

receiving, from the servers, information concerning chunks stored by the servers (column 8, lines 16-19, Mattis); and

identifying, to the servers, ones of the chunks that are orphaned chunks (pg.24, ¶3, lines 4-5, Hisgen).

Regarding Claim 17, the combination of Mattis in view of Hisgen, discloses a method wherein the deletion of the orphaned chunks (pg.24, ¶3, lines 5-8, Hisgen) occurs as part of a garbage collection process (Fig. 8A, column 21, lines 52-55, Mattis).

#### ***Other Prior Art Made of Record***

1. "Cross-Partition Protocols in a Distributed File Service"

<http://www.hpl.hp.com/techreports/2001/HPL-2001-129.pdf>

***Points of Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chelcie Daye whose telephone number is 571-272-3891. The examiner can normally be reached on M-F, 7:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Safet Metjahic can be reached on 571-272-4023. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chelcie Daye  
Patent Examiner  
Technology Center 2100  
December 9, 2005

